UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,430	02/13/2002	Jun Ogawa	FUJI 19.448	8740

7590 05/13/2004	EXAMINER	
Katten Muchin Zavis Rosenman	RYMAN, DANIEL J	
575 Madison Avenue		
New York, NY 10022-2585	ART UNIT	PAPER NUMBER
	2665	

DATE MAILED: 05/13/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 April 2004*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☒ Claim(s) *6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 4/20/2004 have been fully considered but they are not

persuasive. On pages 8-9 of the Response, Applicant argues that Hamamoto in view of Callon

fails to disclose the limitations of the claims since Callon discloses encapsulation of a packet

rather than alteration of a packet as is taught in the claimed invention. Examiner, respectfully,

asserts that Applicant is reading Callon in isolation rather than in the context of Hamamoto.

Hamamoto discloses translating an IPv4 packet to an IPv6 packet by placing the IPv4 address in

an IPv6 header; however, Hamamoto does not expressly disclose assigning the IPv4 network a

virtual hierarchy number of the IPv6 network in order to allow the IPv4 packets to be routed in

the IPv6 network. Callon teaches that it is well known to treat a network of a first protocol type

as a virtual extension of a network of a second protocol type through the use of encapsulation

where a header conforming to the second protocol type is attached to the packet. In this system

the header conforming to the second protocol type contains a "virtual hierarchy number" of the

network conforming to the second protocol type in order to allow the packet conforming to the

first protocol type to be routed in the network conforming to the second protocol type. Given

these teachings, Applicant argues that Hamamoto in view of Callon suggests taking an IPv4

packet and attaching to it an IPv6 header in order to allow the IPv4 packet to be routed in the

IPv6 network; however, as Applicant notes, encapsulation adds additional overhead to the packet

thus decreasing the bandwidth efficiency of the system. Examiner asserts that one of ordinary

skill in the art would recognize this and thus be motivated to use the teachings of Hamamoto to

overcome this bandwidth efficiency problem. In contrast to encapsulation, Hamamoto, as

previously described, teaches how IPv4 packets can be converted into IPv6 packets without the

bandwidth problems encountered in encapsulation. Thus, Examiner asserts that Hamamoto in

view of Callon suggests performing the IPv4 to IPv6 conversion taught by Hamamoto and in

addition assigning the IPv4 network a virtual hierarchy number of the IPv6 network because this

combination allows the IPv4 packets to be transmitted over the IPv6 network while not

decreasing the bandwidth efficiency of the IPv6 network. As such, Examiner maintains that

Hamamoto and Callon are combinable and that such a combination reads on the limitations of

the claims.

2.   Examiner urges Applicant to add additional limitations to the claims in order to

distinguish the claims from the cited prior art. As of yet, Applicant has focused on claiming the

packet conversion aspect of the invention (converting IPv4 packets to IPv6 packets). Examiner

suggests that Applicant claim other aspects of the invention, such as the routing table update

methods seen in Figs. 19 and 20 and page 16, line 21-page 19, line 7 of the specification since

such limitations could overcome the prior art.

Claim Objections

3.   Claim 6 is objected to because of the following informalities: "method s claimed" should

be "method as claimed". Appropriate correction is required.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

5.   Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamoto et

al (USPN 6,038,233) in view of Callon et al (USPN 5,251,205).

6.   Regarding claims 1 and 7, Hamamoto discloses a routing control method and apparatus in

a mixed environment of a network of a first type (IPv6) and a network of a second type (IPv4),

respectively defined by first and second address spaces (Figs. 1, 11A, and 11B and col. 1, line

17-col. 3, line 27), the first and second address spaces each having network-identifying and

host-identifying portions (Figs. 1, 11A, and 11B and col. 1, line 17-col. 3, line 27) where it is

implicit that the address spaces have network and host identifying portions, wherein the network

of the first type provides routing control by referencing a subset of address bits of the

network-identifying portion of the first address space, and the network of the second type

provides routing control by referencing an entirety of address bits of the network-identifying

portion of the second address space (Figs. 1, 11A, and 11B and col. 1, line 17-col. 3, line 27)

where it is implicit that IPv6 routes according to a subset of network identifying bits while IPv4

routes according to all network-identifying bits as defined by Applicant, comprising the steps of

and means for: formatting the address space of a packet in the network of the second type as an

address space of a packet in the network of the first type (Figs. 12A and 12B and col. 2, line 41-

col. 3, line 27) by attaching a virtual hierarchy number (hierarchy address space is filled with

nulls) to a packet to be relayed at the router when the packet is to be relayed between the

network of the second type and the network of the first type (Figs. 12A and 12B and col. 2, line

41-col. 3, line 27) and removing the virtual hierarchy number from the packet to be relayed at the

router when the packet is to be relayed between the network of the first type and a network of the

second type (Figs. 12A and 12B and col. 2, line 41-col. 3, line 27). Hamamoto does not

expressly disclose assigning the network of the second type a virtual hierarchy number that corresponds to the subset of address bits of the network-identifying portion of the first address space and identifies a portion of the network of the first type at which the network of the second type is interfaced via a router or performing routing control by the virtual hierarchy number within the network of the first type. Callon teaches as prior art that it is well known to assign a network of a second type a virtual hierarchy number (encapsulation) that corresponds to the subset of address bits of the network-identifying portion of a first address space and identifies a portion of the network of a first type at which the network of the second type is interfaced via a router for performing routing control by the virtual hierarchy number within the network of the first type (col. 1, lines 5-50; col. 2, lines 15-41; col. 3, lines 13-41). It would have been obvious to one of ordinary skill in the art at the time of the invention to assign the network of the second type a virtual hierarchy number that corresponds to the subset of address bits of the network-identifying portion of the first address space and identifies a portion of the network of the first type at which the network of the second type is interfaced via a router and to perform routing control by the virtual hierarchy number within the network of the first type in order to allow a packet of one protocol type to be transmitted over a network using another protocol type.

7.   Regarding claims 2 and 8, referring to claims 1 and 7, Hamamoto in view of Callon discloses that an address of the network of the second type is accommodated in an interface identification information block of an address format of the network of the first type (Hamamoto: Figs. 12A and 12B and col. 2, line 41-col. 3, line 27). Hamamoto in view of Callon suggests that the virtual hierarchy number is accommodated in a hierarchy information block of the address format of the network of the first type for said routing control within the network of the first type

(Hamamoto: Figs. 1, 11A, 11B, 12A, and 12B and col. 1, line 17-col. 3, line 27 and Callon: col.

1, lines 5-50; col. 2, lines 15-41; col. 3, lines 13-41). Hamamoto discloses that the IPv4 address

is turned into an IPv6 address by inserting the IPv4 address into a nulled IPv6 address (Figs. 1,

11A, 11B, 12A, and 12B and col. 1, line 17-col. 3, line 27). Callon discloses attaching routing

information pertaining to a first network to a packet destined from a second network to the first

network in order to allow the packet to be properly routed in the first network (Callon: col. 1,

lines 5-50; col. 2, lines 15-41; col. 3, lines 13-41). By inserting the routing information for the

IPv6 network into the nulled packet containing the IPv4 address instead of encapsulating the

nulled IPv6-compatible-IPv4 with another IPv6 header, the IPv6-compatible-IPv4 packet will be

formatted for routing in the IPv6 network, as Callon teaches, while using less bandwidth than

would be required for encapsulation. It would have been obvious to one of ordinary skill in the

art at the time of the invention to accommodate the virtual hierarchy number in a hierarchy

information block of the address format of the network of the first type for said routing control

within the network of the first type in order to conserve bandwidth.

8.   Regarding claims 3 and 9, referring to claims 2 and 8, Hamamoto in view of Callon

suggests that each of one or more routers of the network of the first type comprises a first routing

table that performs said routing control by using only the hierarchical information block as a key

(Callon: col. 1, lines 5-50; col. 2, lines 15-41; col. 3, lines 13-41) where Callon discloses that

routing in the first network is performed using the network information in the packet pertaining

to the first network, and a second routing table that performs routing control by using the

hierarchical information block and the interface identification information block as keys

(Hamamoto: Figs. 1, 11A, 11B, 12A, and 12B and col. 1, line 17-col. 3, line 27 and Callon: col.

1, lines 5-50; col. 2, lines 15-41; col. 3, lines 13-41) where gateways between the two networks

would also need to use the routing information pertaining to the second network in order to

properly route a packet.

9.   Regarding claims 4 and 10, referring to claims 3 and 9, Hamamoto in view of Callon

discloses that each of the one or more routers of the network of the first type uses the first

routing table when relaying a packet between the network of the first type and another network

of the first type (Callon: col. 1, lines 5-50; col. 2, lines 15-41; col. 3, lines 13-41).

10.   Regarding claims 5 and 11, referring to claims 3 and 9, Hamamoto in view of Callon

discloses that each of the one or more routers of the network of the first type uses the second

routing table when relaying a packet from the network of the first type to the network of the

second type, and from the network of the second type to the network of the first type

(Hamamoto: Figs. 1, 11A, 11B, 12A, and 12B and col. 1, line 17-col. 3, line 27 and Callon: col.

1, lines 5-50; col. 2, lines 15-41; col. 3, lines 13-41).

11.   Regarding claims 6 and 12, referring to claims 5 and 11, Hamamoto in view of Callon

discloses that the router interfacing the network of the first type with the network of the second

type recognizes a packet relay from the network of the second type to the network of the first

type, and from the network of the first type to the network of the second type, by using a

receiving interface name and a transmission interface name when relaying the packet

(Hamamoto: Figs. 1, 11A, 11B, 12A, and 12B and col. 1, line 17-col. 3, line 27 and Callon: col.

1, lines 5-50; col. 2, lines 15-41; col. 3, lines 13-41).

12.   Regarding claims 13 and 14, referring to claims 1 and 7, Hamamoto in view of Callon

discloses that the network of the first type is an IPv6 network, and the network of the second

type is an IPv4 network (Hamamoto: col. 1, line 17-col. 3, line 27).

Conclusion

13.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure: Perlman et al (USPN 5,557,745) see col. 5, lines 40-62 which detail encapsulating a

packet to be routed over a "foreign protocol." Templin (PG Pub 2001/0040895) see entire

document which pertains to IPv4-IPv6 compatibility. Krishnan (USPN 6,157,950) see Fig. 4;

col. 3, line 17-col. 6, line 67; and col. 7, line 53-col. 8, line 24 which discloses how hierarchical

routing is performed and the logical structure of IP addresses. Perlman et al (USPN 6,094,525)

see entire document which pertains to network addressing arrangement for backward compatible

routing of an expanded address space. Hinchey et al (USPN 5,999,541) see entire document

which pertains to stripping the header of a packet conforming to a first protocol and attaching to

the packet a header conforming to a second protocol in order to allow a packet conforming to the

first protocol to be transmitted over a network conforming to the second protocol.

14.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Daniel J. Ryman whose telephone number is (703)305-6970. The

examiner can normally be reached on Mon.-Fri. 7:00-5:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Huy Vu can be reached on (703)308-6602. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Daniel J. Ryman
Examiner
Art Unit 2665
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Daniel J. Ryman

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600